PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference MM/03013/PCT	**FOR FURTHER ACTION**	See Form PCT/IPEA/416
International application No. PCT/EP2004/001412	International filing date *(day/month/year)* 12.02.2004	Priority date *(day/month/year)* 14.02.2003

International Patent Classification (IPC) or national classification and IPC
C07C229/42

Applicant
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1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☐ *sent to the applicant and to the International Bureau)* a total of sheets, as follows:
      ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the opinion
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
13.09.2004	07.01.2005

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2004/001412

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:

   ☐ international search (under Rules 12.3 and 23.1(b))
   ☐ publication of the international application (under Rule 12.4)
   ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

   Description, Pages

   1-8 as originally filed

   Claims, Numbers

   1-11 as originally filed

   ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

   ☐ the description, pages
   ☐ the claims, Nos.
   ☐ the drawings, sheets/figs
   ☐ the sequence listing *(specify)*:
   ☐ any table(s) related to sequence listing *(specify)*:

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

   ☐ the description, pages
   ☐ the claims, Nos.
   ☐ the drawings, sheets/figs
   ☐ the sequence listing *(specify)*:
   ☐ any table(s) related to sequence listing *(specify)*:

* *If item 4 applies, some or all of these sheets may be marked "superseded."*

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-11
	No:	Claims	
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-11
Industrial applicability (IA)	Yes:	Claims	1-11
	No:	Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

D1: EP-A-0 521 393 (FARMAKA SRL) 7 January 1993 (1993-01-07)
D2: EP-A-0 271 709 (ALTERGON SA) 22 June 1988 (1988-06-22)
D3: US-A-4 407 824 (ECKERT THEODOR) 4 October 1983 (1983-10-04)
D4: US-A-5 614 223 (SIPOS TIBOR) 25 March 1997 (1997-03-25)
D5: DE 198 56 101 A (LABTEC GES FUER TECHNOLOGISCHE) 8 June 2000 (2000-06-08)
D6: PATENT ABSTRACTS OF JAPAN vol. 2000, no. 12, 3 January 2001 (2001-01-03) & JP 2000 256186 A (TAISHO PHARMACEUT CO LTD), 19 September 2000 (2000-09-19)

1. The present application relates to cetylpyridinium salt of diclofenac, a method for its preparation and a pharmaceutical composition including it with anti-inflammatory and antibacterial properties.

2. D1 discloses (2-hydroxyethyl)trimethylammonium salt of diclofenac, a method for its preparation and a pharmaceutical composition including it with anti-inflammatory properties (see the passages mentioned in the search report).

3. D2 discloses salts of diclofenac with cyclic organic bases, a method for their preparation and pharmaceutical compositions including them with anti-inflammatory properties (see the passages mentioned in the search report).

4. D3 discloses salts of diclofenac with organic bases, a method for their preparation and pharmaceutical compositions including them with anti-inflammatory properties (see the passages mentioned in the search report).

5. D4-D6 disclose pharmaceutical compositions including cetylpyridinium and their antimicrobial properties (see the passages mentioned in the search report).

Novelty

6. The subject-matter of claims 1-11 is novel in the sense of Art. 33(2) PCT. None of the available documents of the prior art discloses cetylpyridinium salt of

diclofenac. Hence, a method for its preparation and a pharmaceutical composition including it with anti-inflammatory and antibacterial properties are novel as well.

Inventive step

7. The subject-matter of claims 1-11 cannot be considered as involving an inventive step in the sense of Art. 33(3) PCT.

7.1. Salts of diclofenac with organic bases and their water solubility in order to prepare pharmaceutical formulations are known in the art (D1-D3).

7.2. The antimicrobial properties of cetylpyridinium are known in the prior art (D4-D6).

7.3. The problem to be solved in the application in view of the prior art can be seen in the provision of a pharmaceutical formulation including the anti-inflammatory agent diclofenac as a salt with water solubility and having as well antimicrobial properties.

7.4. The provision of cetylpyridinium salt of diclofenac would be obvious for the skilled person in the art in order to achieve both water solubility and antimicrobial properties in view of the teaching of the prior art. Hence, an inventive step cannot be acknowledged.

Further comments

8. The statement "low molecular weight" used in claim 7 and in the description has no generally accepted meaning in the art and is regarded as unclear, since the higher limit of molecular weight is not unambiguously defined (Art. 6 PCT). Claim 7 should not have been drafted using this relative and ambiguous statement.

9. The use of the word "about", especially in connection with numerical ranges, is generally regarded as rendering the determination of the exact scope of the range difficult. When used in a claim as well as in the description, this results in lack of clarity, contrary to Art. 6 PCT. Therefore, the description should not have been drafted using this word.

10. The expression "and the like" used in the description renders unclear the scope of

the protection sought, contrary to Art. 6 PCT.

11. There is a mistake in claim 11. The claim is said to be dependent on claim 9. However, claim 9 is not relating to a pharmaceutical composition. It seems that claim 11 should have been drafted depending on claim 10.

12. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D2-D6 is not mentioned in the description, nor are these documents identified therein.

13. When filing amended claims the applicant should at the same time bring the description into conformity with the amended claims.

14. In order to facilitate the examination of the conformity of the amended application with the requirements of Article 34(2)(b) PCT, the applicant is requested to clearly identify the amendments carried out, no matter whether they concern amendments by addition, replacement or deletion, and to indicate the passages of the application as filed on which these amendments are based (see also Rule 66.8(a) PCT).

If the applicant regards it as appropriate these indications could be submitted in handwritten form on a copy of the relevant parts of the application as filed.